



广东出入境检验检疫局检验检疫技术中心
轻工实验室
LIGHT INDUSTRIAL PRODUCTS LABORATORY OF GUANGDONG
INSPECTION AND QUARANTINE TECHNOLOGY CENTER



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锂电池 UN38.3 安全性能检测证书

Certificate for Lithium Battery of UN38.3 Safety

样品名称: 锂离子蓄电池 (型号: ACK081 3.7V 1850mAh 6.7Wh)

Sample Name: Lithium battery
(Model: ACK081 3.7V 1850mAh 6.7Wh)

生产企业: 惠州市福莱思电子工程有限公司

Manufacture: Huizhou Flex Three Electronic Engineer Co.,Ltd

委托单位: 3M SVENSKA AB

Applicant: 轻工 3M SVENSKA AB



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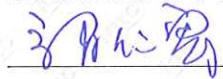
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检测证书 TEST REPORT

样品名称 Sample Name	锂离子蓄电池 Lithium battery	样品标记 Mark	21201300147
电池型号 Battery Type	ACK081 3.7V 1850mAh 6.7Wh	样品数量 Sample Number	48 个/48 pieces
委托单位 Applicant	3M SVENSKA AB		
地址 Address	Lngelundsvagen 21, SE-331 40, Varnamo, Swenden		
标称电压 Nominal Voltage	3.7V	额定容量 Rated Capacity	1850mAh
充电电流 Charge Current	600mA	放电电流 Discharge Current	200mA
最大充电电流 Maximum Charge Current	800mA	最大放电电流 Maximum Discharge Current	600mA
充电限制电压 Limited Charge Voltage	4.2V	终止电压 Cut-off Voltage	3.0V
接样时间 Date of Sample Received	2013-01-10	完成时间 Date of Accomplished	2013-03-26
检测标准 Test Standard	联合国《关于危险货物运输的建议书 试验和标准手册》38.3 章 (第五修订版) Section 38.3 of the Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (Rev.5)		
样品描述 Sample Description	#1、#2、#3、#9、#10: 第一个交替充电放电周期完全充电状态的电池组; Batteries of #1, #2, #3, #9 and #10 are full charged after one cycle; #4、#5、#6、#11、#12: 第五十个交替充电放电周期完全充电状态的电池组; Batteries of #4, #5, #6, #11 and #12 are full charged after fifty cycle; #7、#8: 第一个交替充放电周期50%设计标定电容量状态的电池组。 Batteries of #7 and #8 are the fist cycle at 50% of the design rated capacity.		
结论 Conclusion	<p>所检测样品电池符合联合国《关于危险货物运输的建议书 试验和标准手册》38.3 章 (第五修订版) 的要求, 检测结果详见 4-6 页。</p> <p>The battery samples are complying with Section 38.3 of the Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria (Rev.5). For the details, refer to the following page 4 to 6.</p> <p style="text-align: right;">AUTHORISED BY </p>		
备注 Remark	<p>1. 检验结果仅对样品有效。 The test results are only valid for the test samples submitted the applicant.</p> <p>2. 本报告译文如有任何疑点, 概以中文为主。 In case of divergence, the Chinese text shall be regarded as authentic.</p>		

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样品图片
Photo of the sample



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检测结果:
Test results:

检测项目 Test Item	标准要求 Requirement of Standard	样品编号 Sample Number	检测结果 Test Result	评定 Conclusion
高空模拟 Altitude simulation	<p>试验电池或电池组在压力等于或低于 11.6kPa 和环境温度 20°C±5°C 下存放至少 6h。试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <p>Test cells and batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature 20 ± 5 °C. Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.</p>	#1,#2,#3, #4,#5,#6	<p>无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧; 未完全放电的电池试验后的开路电压大于试验前电压 90%。</p> <p>No mass loss, no leakage, no venting, no disassembly, no rupture and no fire, the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage</p>	合格 Pass
温度循环 Thermal test	<p>试验电池或电池组在试验温度等于 75°C±2°C 下存放至少 6h, 接着在试验温度等于 -40°C±2°C 下存放至少 6h (大型电池或电池组暴露于极端试验温度的时间至少为 12h)。两个极端试验温度之间的最大时间间隔为 30min。重复 10 次, 再将所有试验电池或电池组在环境温度 20°C±5°C 下存放 24h。试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <p>Test cells and batteries are to be stored for at least six hours at a test temperature equal to 75 ± 2 °C, followed by storage for at least six hours at a test temperature equal to -40 ± 2 °C. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated 10 times, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20 ± 5 °C). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours. Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.</p>	#1,#2,#3, #4,#5,#6	<p>无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧; 未完全放电的电池试验后的开路电压大于试验前电压 90%。</p> <p>No mass loss, no leakage, no venting, no disassembly, no rupture and no fire, the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage</p>	合格 Pass
振动 Vibration	<p>将电池或电池组直接安装或通过夹具安装在振动台的台面上, 用正弦波, 频率在 7Hz 和 200Hz 之间摆动再回到 7Hz 的对数扫频 15min, 对三个互相垂直的电池或电池组安装方向的每个方向重复进行 12 次, 一共振动 3h。试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <p>Cells and batteries are firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face. Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.</p>	#1,#2,#3, #4,#5,#6	<p>无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧; 未完全放电的电池试验后的开路电压大于试验前电压 90%。</p> <p>No mass loss, no leakage, no venting, no disassembly, no rupture and no fire, the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage</p>	合格 Pass

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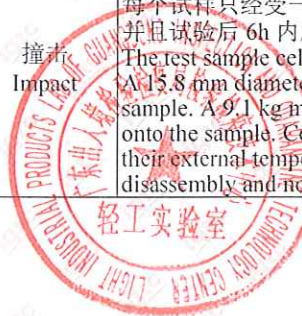
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检测项目 Test Item	标准要求 Requirement of Standard	样品编号 Sample Number	检测结果 Test Result	评定 Conclusion
冲击 Shock	<p>将电池或电池组用坚硬支架紧固在试验装置上, 对每个电池或电池组以最大加速度 150gn 的半正弦波冲击, 脉冲持续时间 6ms, 但对大型电池或电池组应以最大加速度 50gn 的半正弦波冲击, 脉冲持续时间 11ms。按三个相互垂直的轴向分别对其正负极各冲击 3 次, 共冲击 18 次。各试验电池或电池组应无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧, 并且每个试验电池或电池组在试验后的开路电压不少于其在进行这一试验前电压的 90% (完全放电状态的试验电池或电池组除外)。</p> <p>Test cells and batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each cell or battery shall be subjected to a half-sine shock of peak acceleration of 150gn and pulse duration of 6 milliseconds. However, large cells and large batteries shall be subjected to a half-sine shock of peak acceleration of 50gn and pulse duration of 11 milliseconds. Each cell or battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks. Cells and batteries meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. The requirement relating to voltage is not applicable to test cells and batteries at fully discharged states.</p>	#1,#2,#3, #4,#5,#6	<p>无重量损失、无渗漏、无排气、无解体、无破裂和无燃烧; 未完全放电的电池试验后的开路电压大于试验前电压 90%。</p> <p>No mass loss, no leakage, no venting, no disassembly, no rupture and no fire, the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage</p>	合格 Pass
外部短路 External short circuit	<p>待试验电池或电池组的外壳温度稳定在 55°C±2°C 后, 在 55°C±2°C 下使电池或电池组经受总外电阻小于 0.1Ω 的短路条件, 当电池或电池组外壳温度回到 55°C±2°C 后继续至少 1h, 然后短路断开, 再观察电池或电池组 6h 才结束试验。电池或电池组的外壳温度应不超过 170°C, 并且试验后 6h 内应无解体、无破裂和无燃烧。</p> <p>The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 55 ± 2 °C and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at 55 ± 2 °C. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 55 ± 2 °C. The cell or battery must be observed for a further six hours for the test to be concluded. Cells and batteries meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly, no rupture and no fire within six hours of this test.</p>	#1,#4	<p>电池外壳温度小于 170°C, 试验后 6 小时无解体、无破裂和无燃烧。</p> <p>External temperature does not exceed 170 °C and no disassembly, no rupture and no fire within six hours of this test.</p>	合格 Pass
撞击 Impact	<p>试验电池或电池组放在平坦表面上, 一根直径 15.8mm 的棒横放在试验的中心, 用一块 9.1kg 的重锤从(61±2.5)cm 高处落到试样上, 每个试样只经受一次撞击。电池或电池组的外部温度不超过 170°C 并且试验后 6h 内应无解体和无燃烧。</p> <p>The test sample cell or component cell is to be placed on a flat surface. A 15.8 mm diameter bar is to be placed across the centre of the sample. A 9.1 kg mass is to be dropped from a height of (61 ± 2.5) cm onto the sample. Cells and component cells meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly and no fire within six hours of this test.</p>	#7,#8	<p>电池外壳温度小于 170°C, 试验后 6 小时无解体和无燃烧。</p> <p>External temperature does not exceed 170 °C and no disassembly, no rupture and no fire within six hours of this test.</p>	合格 Pass

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检测项目 Test Item	标准要求 Requirement of Standard	样品编号 Sample Number	检测结果 Test Result	评定 Conclusion
过度充电 Overcharge	<p>充电电流必须是制造商建议的最大连续充电电流的两倍, 试验的最小电压应如下:</p> <p>(a) 制造商建议的充电电压不大于 18V 时, 试验的最小电压应是电池组最大充电电压的两倍或 22V 两者中的较少者。</p> <p>(b) 制造商建议的充电电压大于 18V 时, 试验的最小电压应是最大充电电压的 1.2 倍。</p> <p>可再充电电池组在环境温度下试验 24h。试样在试验后 7 天内应无解体和无燃烧。</p> <p>The charge current shall be twice the manufacturer's recommended maximum continuous charge current. The minimum voltage of the test shall be as follows:</p> <p>(a) When the manufacturer's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V.</p> <p>(b) When the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.</p> <p>Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. Rechargeable batteries meet this requirement if there is no disassembly and no fire within seven days of the test.</p>	#9,#10, #11,#12	无解体、无燃烧 No disassembly and no fire	合格 Pass
强制放电 Forced discharge	<p>试验原电池或可再充电电池在环境温度下与 12V 的直流电源串联, 在起始电流等于制造商给定的最大放电电流的条件下强制放电。原电池或可再充电电池在试验后 7 天内应无解体和无燃烧。</p> <p>Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in Ampere). Primary or rechargeable cells meet this requirement if there is no disassembly and no fire within seven days of the test.</p>	---	不适用 Not applicable	-----



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